



# Product Lifecycle Management and Sustainable Space Exploration

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# Agenda

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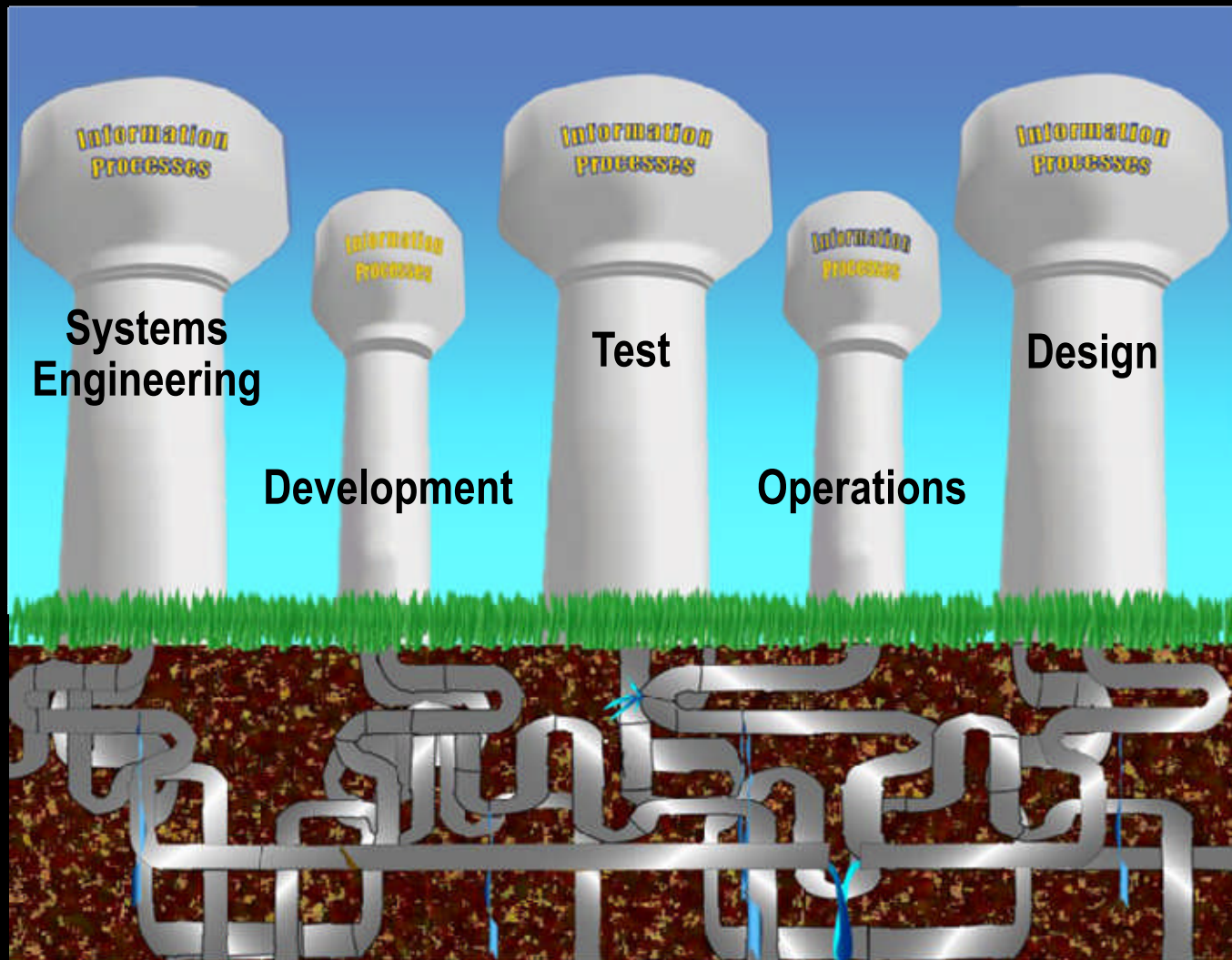
- PLM Used Widely Across Industry
- Information Underpins Aerospace Systems
- PLM: Information Mirroring Model
- NASA's Product Lifecycle
- Product Lifecycle Cost Allocation
- NASA's Systems Engineering Approach
- NASA Processes Support PLM Implementation
- Marshall's Systems Engineering Scope
- Marshall's PLM Efforts
- Strategic Partnership for the Advancement of Collaborative Engineering Education (SPACE)
- Questions

# Product Lifecycle Management (PLM) Used Widely Across Industry



***Adopted out of Financial Necessity and to Improve Product Quality***

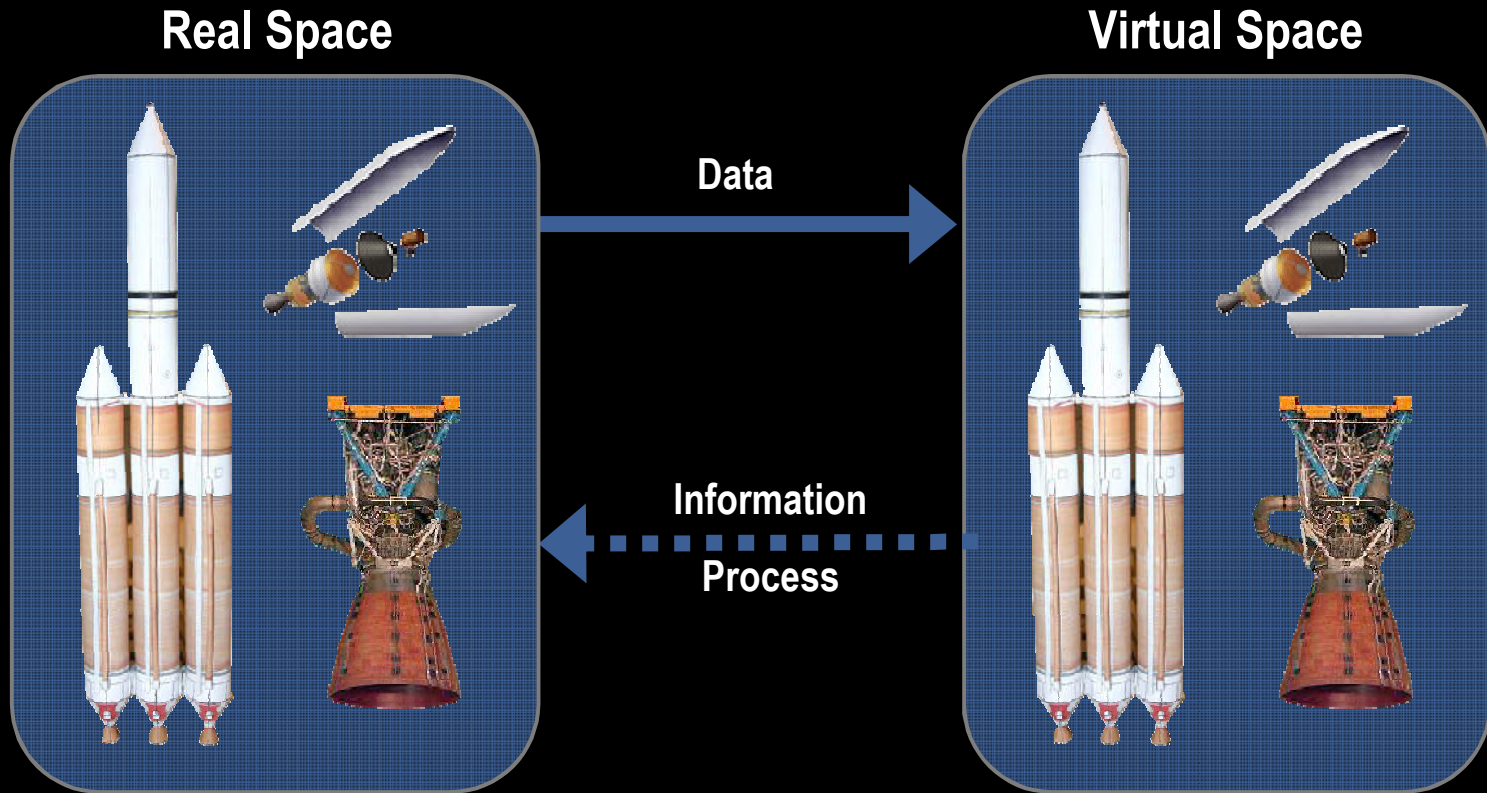
# Information Underpins Aerospace Systems



***Disparate Tools and Data Sources across Product Lifecycle  
create Information Inefficiencies***

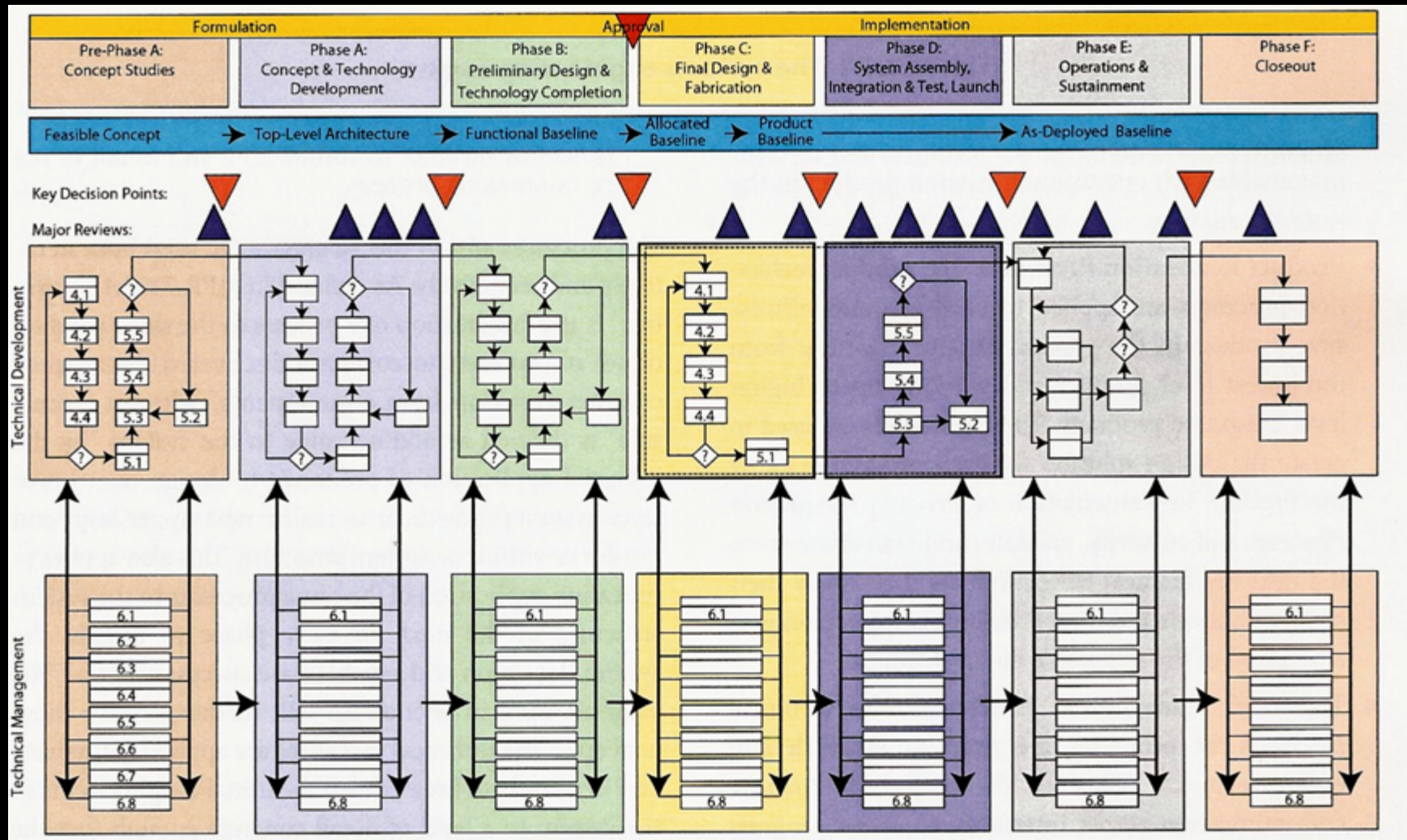


# PLM: Information Mirroring Model



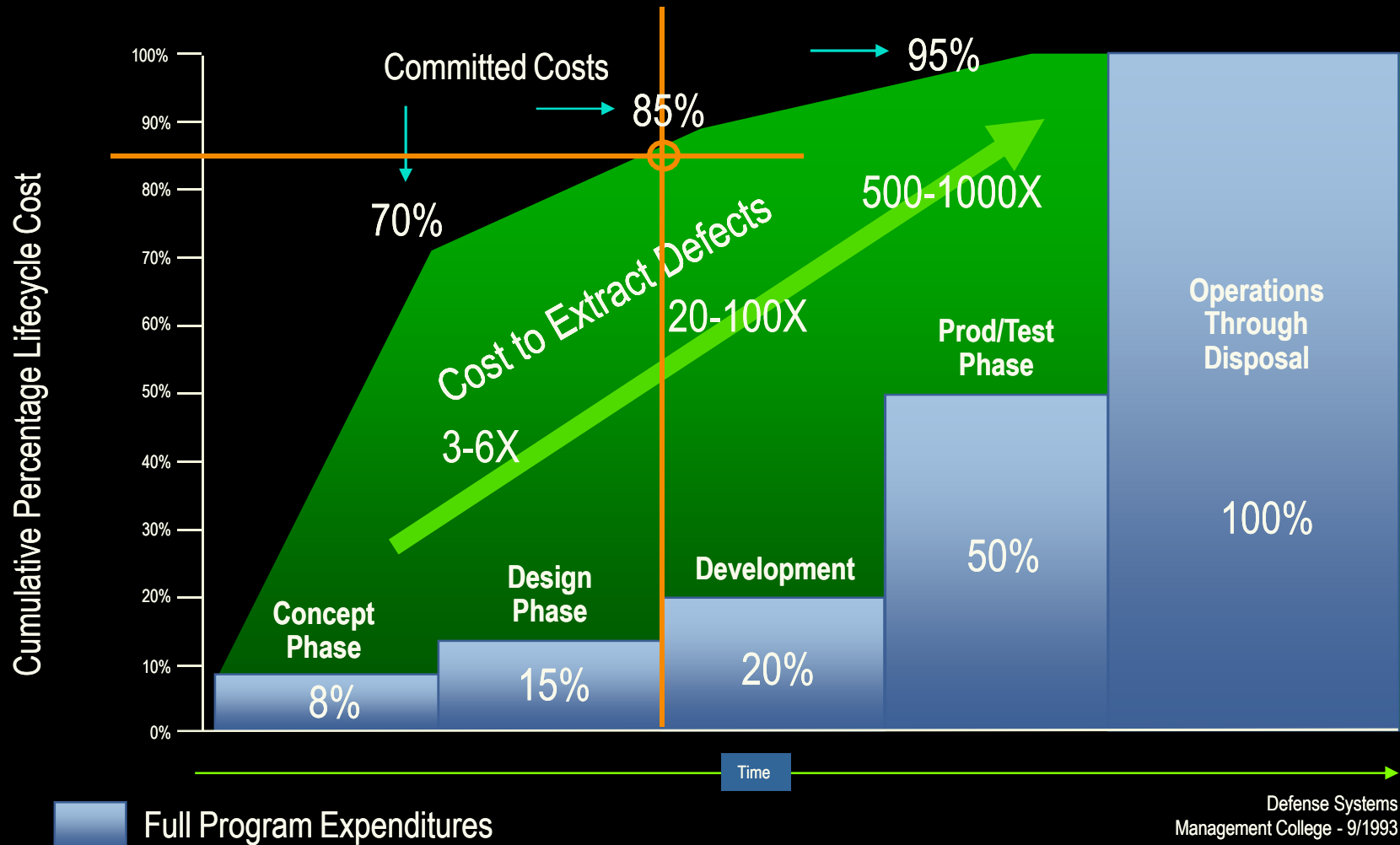
*Trading Atoms for Bits Increases Efficiency and Innovation*

# NASA's Product Lifecycle



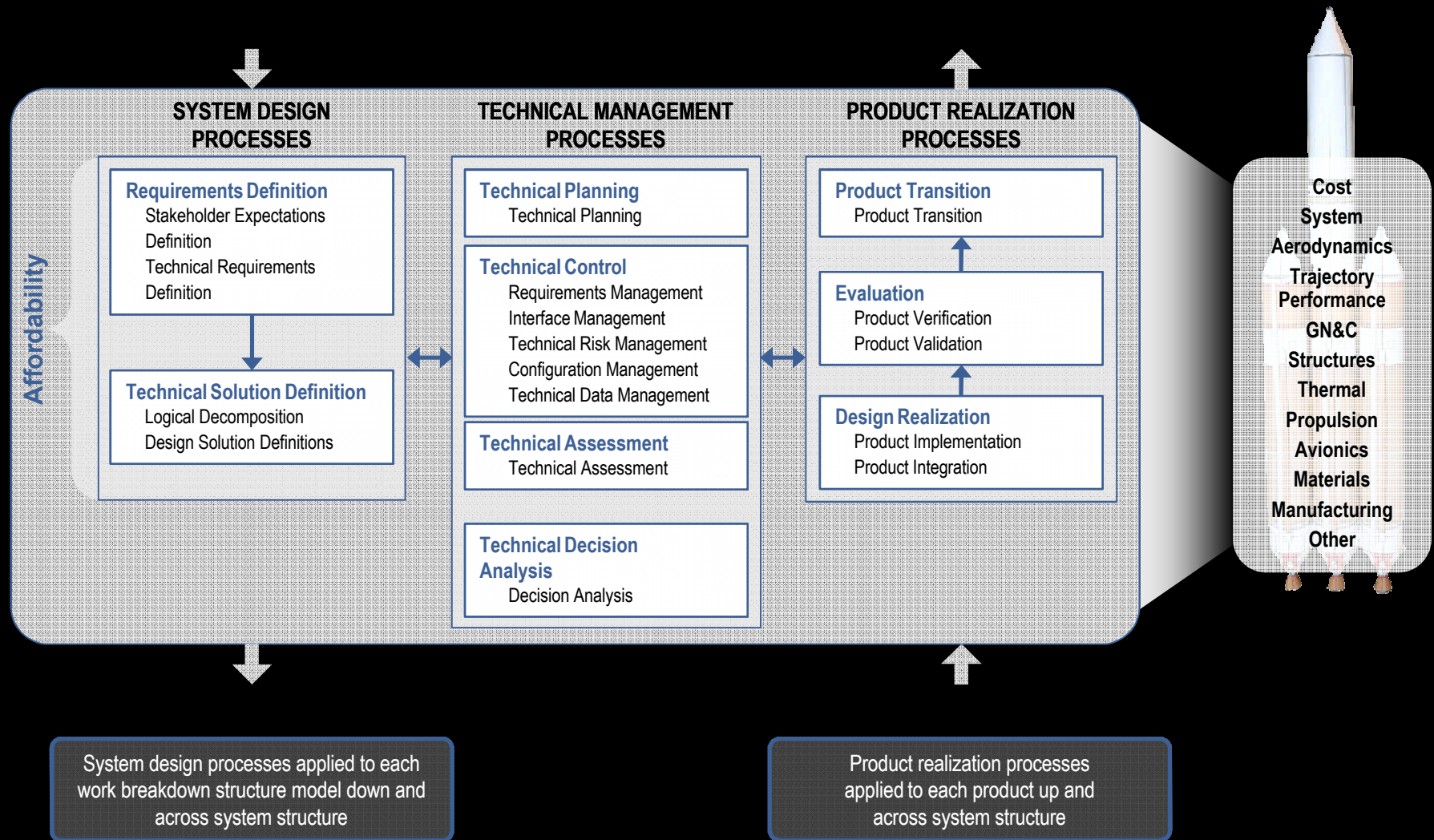
***Systems Engineering is an Integral Part of PLM***

# Product Lifecycle Cost Allocation



**By the Time System Level Design is Complete, 85% of the Costs have been Committed and the Cost to Correct Defects goes up Exponentially**

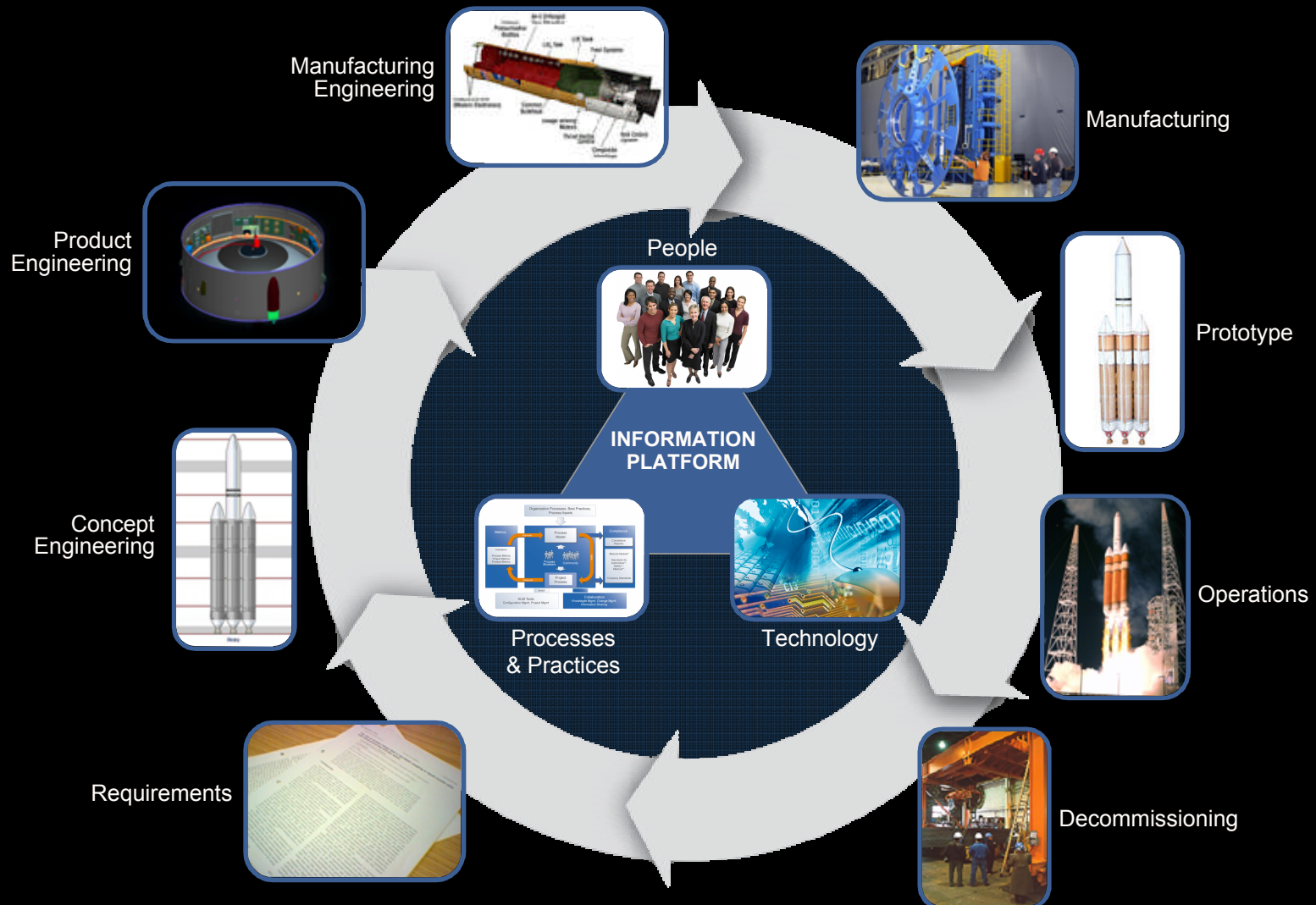
# NASA's Systems Engineering Approach



***Developing Exploration Options That Can Be Implemented Within the Bounds of Projected Future Budgets***

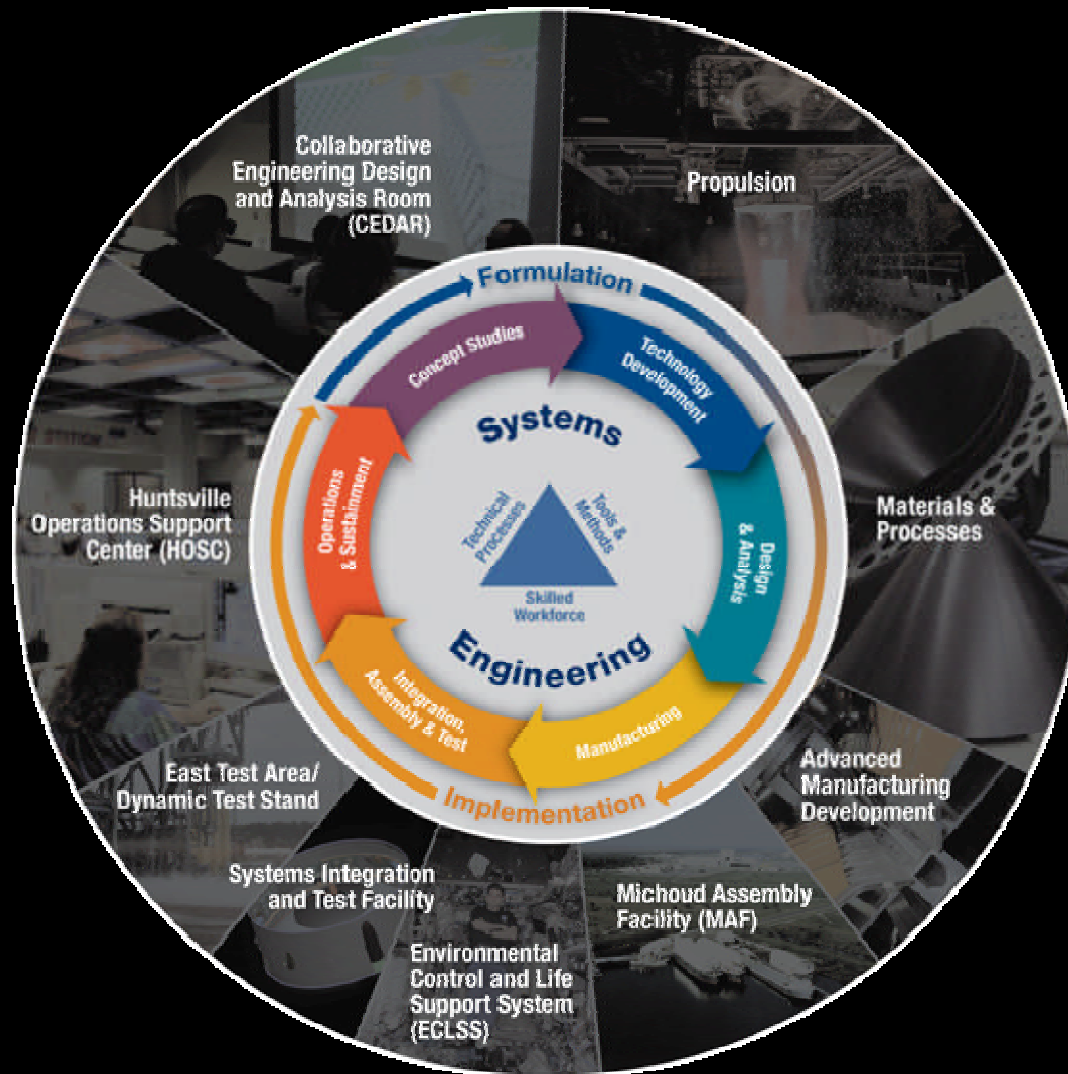


# NASA Processes Support PLM Implementation



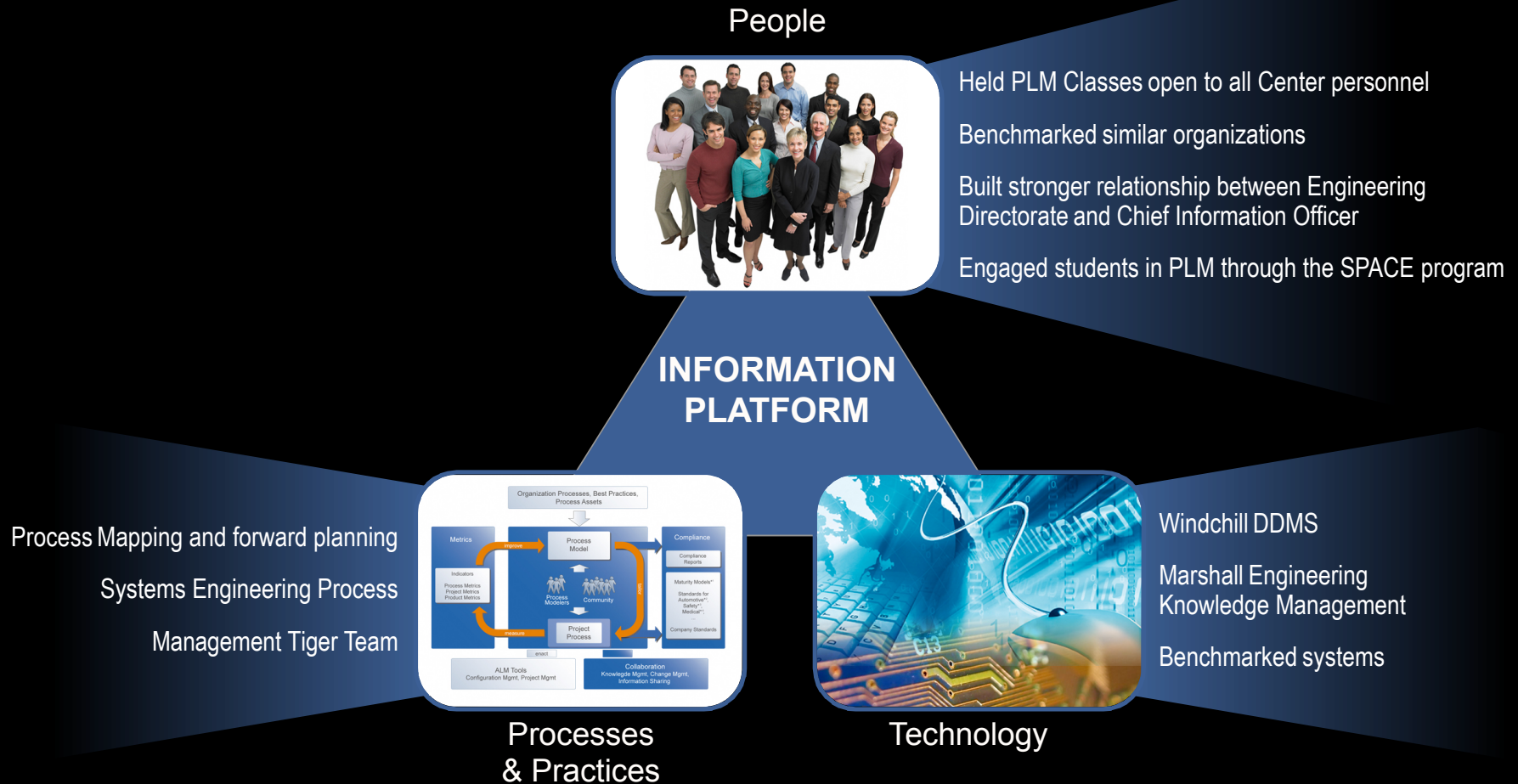
***Integrated Product Lifecycle is Key to Affordability  
of Next Generation Space Launch System***

# Marshall's Systems Engineering Scope



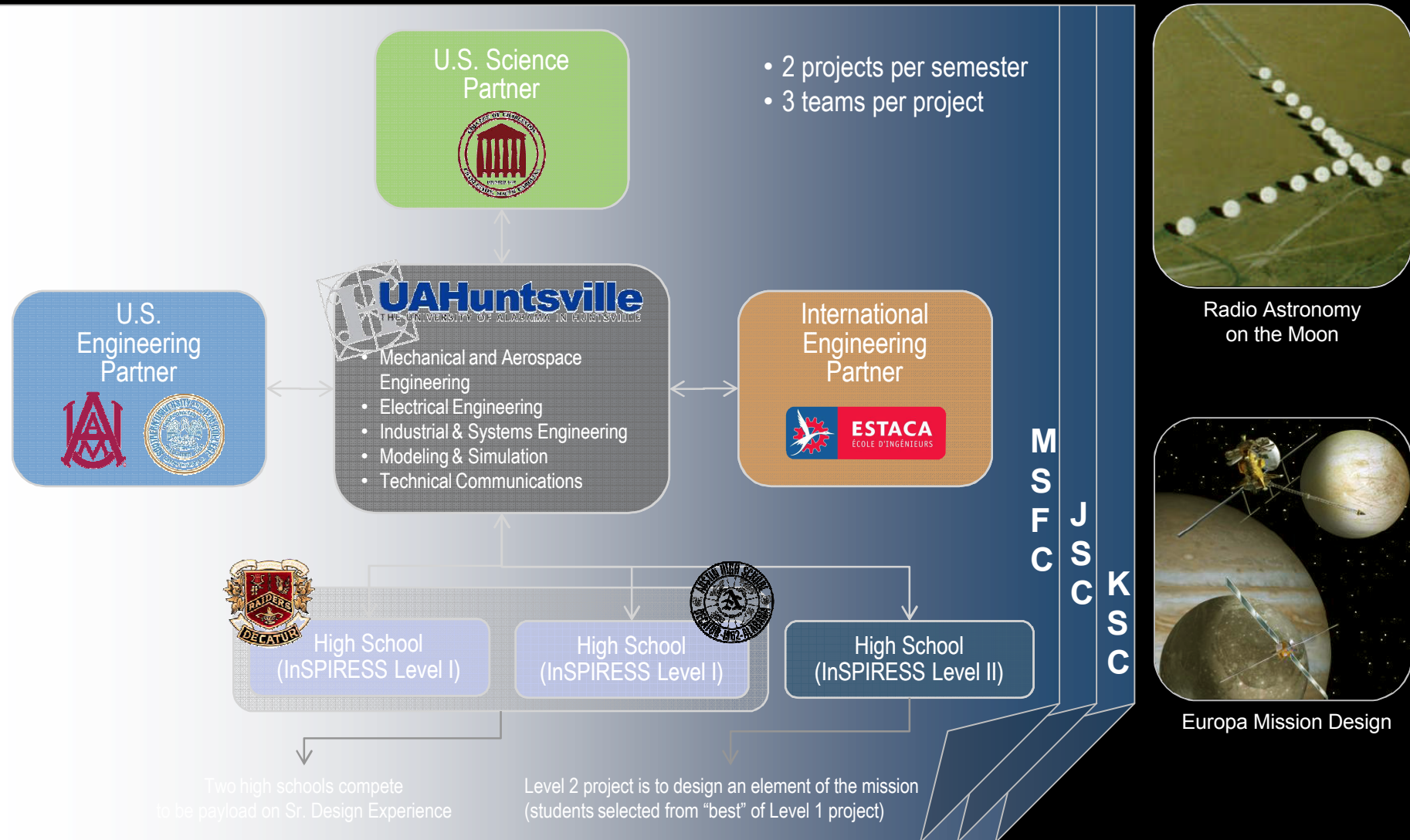
***Marshall is Engaged in All Product Lifecycle Phases***

# Marshall's PLM Efforts



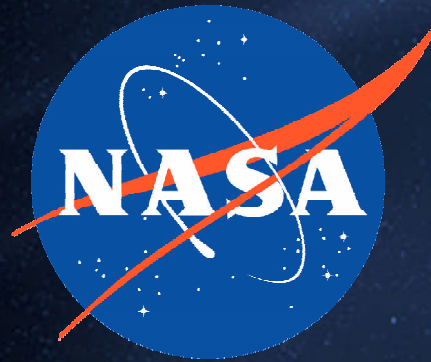
***Making Significant Cultural Changes Important to PLM Success***

# Strategic Partners for the Advancement of Collaborative Engineering Education (SPACE)



***Educating and Learning from Industry and Academia***





*For more information:*  
*[www.nasa.gov](http://www.nasa.gov)*